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| 10/518,904 | 12/23/2004 | Takehiko Tanabu | 43890-713 | 3296 |
| 20277 7590 07/18/2007 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096 | | | EXAMINER SAUNDERS JR, JOSEPH | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,904

Applicant(s)

TANABU ET AL.

Examiner

Joseph Saunders

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the communications filed April 23, 2007.

Claims 1, 2, 5, and 6 are currently pending and considered below.

Specification

2. On page 4 line 4, page 5 line 3, and also occurring in the claims, "an inner peripheral surface of the second plate" when referring to the location of the second magnetic gap still needs to be corrected to "an outer peripheral surface of the second plate". Applicant seems to disagree however in the description of the prior art on page 2 the Applicant describes the same structure and states "the second magnetic gap 8 is placed between an **outer** wall of second plate 5 and an inner circumference of the middle section of yoke 3". Therefore the objection to the specification is maintained. Correction is required.

Claim Rejections - 35 USC § 112

3. In regards to the 35 USC § 112 rejections, the rejection of claims 1 and 2 are maintained since the same problems with regards to the specification as presented above are still present in the claims. Additionally new claims 5 and 6 are also rejected for the same reasons.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. (US 6,744,895 B2), hereinafter Miyamoto, in view of Han et al. (US 2002/0071590 A1), hereinafter Han.

Claim 1: Miyamoto discloses a loudspeaker comprising: a hollow frame (case 21) having opening sections at its upper side and lower side; a hat-shaped yoke (pole piece 22) whose both ends are supported by an inner wall of the frame; a ring-shaped first magnet (annular first permanent magnet 23) being coupled with an upper surface of an outer periphery of the yoke; a columnar second magnet (disc shaped second permanent magnet 25) being coupled with an inner bottom of a middle section of the yoke; a ring-shaped first plate (annular first top plate 24) being coupled with an upper surface of the first magnet; a plate-type second plate (second top plate 26) being coupled with a lower surface of the second magnet; a first diaphragm (second diaphragm 30) whose outer periphery is fixed to an upper opening of the frame; a second diaphragm (first diaphragm 27) whose outer periphery is fixed to a lower opening of the frame; a ring-shaped first voice coil (annular second voice coil 33) whose one end is fixed to the first diaphragm (second diaphragm 30) and other end is

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placed at a first magnetic gap (annular second magnetic gap 35) formed between an inner peripheral surface of the first plate (annular first top plate 24) and an outer peripheral surface of the middle section of the yoke (pole piece 22c); and a second voice coil (annular second voice coil 32) whose one end is fixed to the second diaphragm (first diaphragm 27) and other end is placed at a second magnetic gap (annular first magnetic gap 34) formed between an inner (should be corrected to outer) peripheral surface of the second plate (second top plate 26) and an inner peripheral surface of the middle section of the yoke (pole piece 22c).

Miyamoto does not disclose wherein the frame is integrated with the yoke in assembling the frame, and an upper surface of the yoke is integrated as a reference plane in mounting for a mold of the frame, thereby an interval-accuracy between the first diaphragm and the yoke can be improved as compared with an interval-accuracy between the second diaphragm and the yoke.

Han discloses a magnetic circuit 500 for a micro speaker in which a speaker frame 400 is formed through injection molding to secure the yoke part 100, magnet 200, and upper plate 300 (Figure 6). Han further discloses wherein an upper surface of the yoke (The upper surface of yoke part 100 which is the opposite side where stepped securing part 130 is located, see Figure 2.) thereof is integrated as a reference plane in mounting for a mold of the frame (See Figure 6. When forming the mold of the integrated frame the magnetic circuit 500 of figure 3, which is upside down in figure 6, is placed in the mold, the upper surface of the yoke 100 which is opposite to the side with stepped securing portion 130 is butted against the surface of the lower die 420, at the

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protruding section, and used as a reference plane.), thereby an interval-accuracy between the first diaphragm and the yoke can be improved as compared with an interval-accuracy between the second diaphragm and the yoke (Using the upper surface of yoke 100 as a reference plane allows for precise alignment of the magnetic circuit 500 within the coupling means 430. Since the diaphragms as disclosed by Miyamoto attach to the upper and lower portions of a frame, the upper diaphragm that attaches to the upper portion of Han's frame which in turn is connected to the upper surface of yoke 100 which was used as the reference plane, will have better interval-accuracy than the diaphragm attached to the lower portion of Han's frame since its interval-accuracy would depend on the thickness of the yoke and possibly other components like the thickness of the magnet 200 and upper plate 300).

Since the object of Miyamoto's invention is to provide a loudspeaker that will produce sufficient volume without increasing the size of the loudspeaker (Column 1 Lines 65 – 67), it would have been obvious to one of ordinary skill in the art at the time of the invention to secure the magnetic circuit of Miyamoto to the case in a manner disclosed by Han since Han's invention allows for a yoke part, a magnet placed upon the yoke part, and an upper plate placed upon the magnet to be coupled to a speaker frame resulting in a slim, firmly connected product without requiring a separate coupling of the components by means of an adhesive (Paragraph 11).

Claim 2: Miyamoto discloses a loudspeaker comprising: a hollow frame (case 21) having opening sections at its upper side and lower side; a hat-shaped yoke (pole piece

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22) whose both ends are supported by an inner wall of the frame; a ring-shaped first magnet (annular first permanent magnet 23) being coupled with an upper surface of an outer periphery of the yoke; a columnar second magnet (disc shaped second permanent magnet 25) being coupled with an inner bottom of a middle section of the yoke; a ring-shaped first plate (annular first top plate 24) being coupled with an upper surface of the first magnet; a plate-type second plate (second top plate 26) being coupled with a lower surface of the second magnet; a first diaphragm (second diaphragm 30) whose outer periphery is fixed to an upper opening of the frame; a second diaphragm (first diaphragm 27) whose outer periphery is fixed to a lower opening of the frame; a ring-shaped first voice coil (annular second voice coil 33) whose one end is fixed to the first diaphragm (second diaphragm 30) and other end is placed at a first magnetic gap (annular second magnetic gap 35) formed between an inner peripheral surface of the first plate (annular first top plate 24) and an outer peripheral surface of the middle section of the yoke (pole piece 22c); and a second voice coil (annular second voice coil 32) whose one end is fixed to the second diaphragm (first diaphragm 27) and other end is placed at a second magnetic gap (annular first magnetic gap 34) formed between an inner (should be corrected to outer) peripheral surface of the second plate (second top plate 26) and an inner peripheral surface of the middle section of the yoke (pole piece 22c).

Miyamoto does not disclose wherein the frame is integrated with an outer peripheral part of a connected-component which is formed by coupling the yoke with the first magnet and the first plate, and an upper surface of the yoke is integrated as a

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reference plane in mounting for a mold of the frame, thereby an interval-accuracy between the first diaphragm and the yoke can be improved as compared with an interval-accuracy between the second diaphragm and the yoke.

Han discloses a magnetic circuit 500 for a micro speaker in which a speaker frame 400 (connected-component) is formed through injection molding to secure the yoke part 100, magnet 200, and upper plate 300 (Figure 6). Han further discloses wherein an upper surface of the yoke (The upper surface of yoke part 100 which is the opposite side where stepped securing part 130 is located, see Figure 2.) thereof is integrated as a reference plane in mounting for a mold of the frame (See Figure 6. When forming the mold of the integrated frame the magnetic circuit 500 of figure 3, which is upside down in figure 6, is placed in the mold, the upper surface of the yoke 100 which is opposite to the side with stepped securing portion 130 is butted against the surface of the lower die 420, at the protruding section, and used as a reference plane.), thereby an interval-accuracy between the first diaphragm and the yoke can be improved as compared with an interval-accuracy between the second diaphragm and the yoke (Using the upper surface of yoke 100 as a reference plane allows for precise alignment of the magnetic circuit 500 within the coupling means 430. Since the diaphragms as disclosed by Miyamoto attach to the upper and lower portions of a frame, the upper diaphragm that attaches to the upper portion of Han's frame which in turn is connected to the upper surface of yoke 100 which was used as the reference plane, will have better interval-accuracy than the diaphragm attached to the lower portion of Han's frame

since its interval-accuracy would depend on the thickness of the yoke and possibly other components like the thickness of the magnet 200 and upper plate 300).

Since the object of Miyamoto's invention is to provide a loudspeaker that will produce sufficient volume without increasing the size of the loudspeaker (Column 1 Lines 65 – 67), it would have been obvious to one of ordinary skill in the art at the time of the invention to secure the magnetic circuit of Miyamoto to the case in a manner disclosed by Han since Han's invention allows for a yoke part, a magnet placed upon the yoke part, and an upper plate placed upon the magnet to be coupled to a speaker frame resulting in a slim, firmly connected product without requiring a separate coupling of the components by means of an adhesive (Paragraph 11).

Claim 5: Miyamoto discloses a loudspeaker comprising: a hollow frame (case 21) having opening sections at its upper side and lower side; a hat-shaped yoke (pole piece 22) whose both ends are supported by an inner wall of the frame; a ring-shaped first magnet (annular first permanent magnet 23) being coupled with an upper surface of an outer periphery of the yoke; a columnar second magnet (disc shaped second permanent magnet 25) being coupled with an inner bottom of a middle section of the yoke; a ring-shaped first plate (annular first top plate 24) being coupled with an upper surface of the first magnet; a plate-type second plate (second top plate 26) being coupled with a lower surface of the second magnet; a first diaphragm (second diaphragm 30) whose outer periphery is fixed to an upper opening of the frame; a second diaphragm (first diaphragm 27) whose outer periphery is fixed to a lower

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opening of the frame; a ring-shaped first voice coil (annular second voice coil 33) whose one end is fixed to the first diaphragm (second diaphragm 30) and other end is placed at a first magnetic gap (annular second magnetic gap 35) formed between an inner peripheral surface of the first plate (annular first top plate 24) and an outer peripheral surface of the middle section of the yoke (pole piece 22c); and a second voice coil (annular second voice coil 32) whose one end is fixed to the second diaphragm (first diaphragm 27) and other end is placed at a second magnetic gap (annular first magnetic gap 34) formed between an inner (should be corrected to outer) peripheral surface of the second plate (second top plate 26) and an inner peripheral surface of the middle section of the yoke (pole piece 22c).

Miyamoto does not disclose wherein the frame is integrated with the yoke in assembling the frame, a lower surface of the yoke is integrated as a reference plane in mounting for a mold of the frame, thereby an interval-accuracy between the second diaphragm and the yoke can be improved as compared with an interval-accuracy between the first diaphragm and the yoke.

Han discloses a magnetic circuit 500 for a micro speaker in which a speaker frame 400 is formed through injection molding to secure the yoke part 100, magnet 200, and upper plate 300 (Figure 6). Han further discloses wherein a lower surface of the yoke (The lower surface of yoke part 100 which is also the side where stepped securing part 130 is located, see Figure 2.) thereof is integrated as a reference plane in mounting for a mold of the frame (See Figure 6. When forming the mold of the integrated frame the magnetic circuit 500 of figure 3, which is upside down in figure 6, is placed in the

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mold, the lower surface of the yoke 100 which is the side with stepped securing portion 130 is butted against the surface of upper die 410 and used as a reference plane.), thereby an interval-accuracy between the second diaphragm and the yoke can be improved as compared with an interval-accuracy between the first diaphragm and the yoke (Using the lower surface of yoke 100 as a reference plane allows for precise alignment of the magnetic circuit 500 within the coupling means 430. Since the diaphragms as disclosed by Miyamoto attach to the upper and lower portions of a frame, the lower diaphragm that attaches to the lower portion of Han's frame which in turn is connected to the lower surface of yoke 100 which was used as the reference plane, will have better interval-accuracy than the diaphragm attached to the upper portion of Han's frame since its interval-accuracy would depend on the thickness of the yoke and possibly other components like the thickness of the magnet 200 and upper plate 300).

Since the object of Miyamoto's invention is to provide a loudspeaker that will produce sufficient volume without increasing the size of the loudspeaker (Column 1 Lines 65 – 67), it would have been obvious to one of ordinary skill in the art at the time of the invention to secure the magnetic circuit of Miyamoto to the case in a manner disclosed by Han since Han's invention allows for a yoke part, a magnet placed upon the yoke part, and an upper plate placed upon the magnet to be coupled to a speaker frame resulting in a slim, firmly connected product without requiring a separate coupling of the components by means of an adhesive (Paragraph 11).

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Claim 6: Miyamoto discloses a loudspeaker comprising: a hollow frame (case 21) having opening sections at its upper side and lower side; a hat-shaped yoke (pole piece 22) whose both ends are supported by an inner wall of the frame; a ring-shaped first magnet (annular first permanent magnet 23) being coupled with an upper surface of an outer periphery of the yoke; a columnar second magnet (disc shaped second permanent magnet 25) being coupled with an inner bottom of a middle section of the yoke; a ring-shaped first plate (annular first top plate 24) being coupled with an upper surface of the first magnet; a plate-type second plate (second top plate 26) being coupled with a lower surface of the second magnet; a first diaphragm (second diaphragm 30) whose outer periphery is fixed to an upper opening of the frame; a second diaphragm (first diaphragm 27) whose outer periphery is fixed to a lower opening of the frame; a ring-shaped first voice coil (annular second voice coil 33) whose one end is fixed to the first diaphragm (second diaphragm 30) and other end is placed at a first magnetic gap (annular second magnetic gap 35) formed between an inner peripheral surface of the first plate (annular first top plate 24) and an outer peripheral surface of the middle section of the yoke (pole piece 22c); and a second voice coil (annular second voice coil 32) whose one end is fixed to the second diaphragm (first diaphragm 27) and other end is placed at a second magnetic gap (annular first magnetic gap 34) formed between an inner (should be corrected to outer) peripheral surface of the second plate (second top plate 26) and an inner peripheral surface of the middle section of the yoke (pole piece 22c).

Miyamoto does not disclose wherein the frame is integrated with an outer peripheral part of a connected-component which is formed by coupling the yoke with the first magnet and the first plate, and a lower surface of the yoke is integrated as a reference plane in mounting for a mold of the frame, thereby an interval-accuracy between the second diaphragm and the yoke can be improved as compared with an interval-accuracy between the first diaphragm and the yoke.

Han discloses a magnetic circuit 500 for a micro speaker in which a speaker frame 400 (connected-component) is formed through injection molding to secure the yoke part 100, magnet 200, and upper plate 300 (Figure 6). Han further discloses wherein a lower surface of the yoke (The lower surface of yoke part 100 which is also the side where stepped securing part 130 is located, see Figure 2.) thereof is integrated as a reference plane in mounting for a mold of the frame (See Figure 6. When forming the mold of the integrated frame the magnetic circuit 500 of figure 3, which is upside down in figure 6, is placed in the mold, the lower surface of the yoke 100 which is the side with stepped securing portion 130 is butted against the surface of upper die 410 and used as a reference plane.), thereby an interval-accuracy between the second diaphragm and the yoke can be improved as compared with an interval-accuracy between the first diaphragm and the yoke (Using the lower surface of yoke 100 as a reference plane allows for precise alignment of the magnetic circuit 500 within the coupling means 430. Since the diaphragms as disclosed by Miyamoto attach to the upper and lower portions of a frame, the lower diaphragm that attaches to the lower portion of Han's frame which in turn is connected to the lower surface of yoke 100 which

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was used as the reference plane, will have better interval-accuracy than the diaphragm attached to the upper portion of Han's frame since its interval-accuracy would depend on the thickness of the yoke and possibly other components like the thickness of the magnet 200 and upper plate 300).

Since the object of Miyamoto's invention is to provide a loudspeaker that will produce sufficient volume without increasing the size of the loudspeaker (Column 1 Lines 65 – 67), it would have been obvious to one of ordinary skill in the art at the time of the invention to secure the magnetic circuit of Miyamoto to the case in a manner disclosed by Han since Han's invention allows for a yoke part, a magnet placed upon the yoke part, and an upper plate placed upon the magnet to be coupled to a speaker frame resulting in a slim, firmly connected product without requiring a separate coupling of the components by means of an adhesive (Paragraph 11).

Response to Arguments

6. Applicant's arguments with respect to claims 1, 2, 5, and 6 have been fully considered but they are not persuasive. The examiner agrees that Han is only concerned with the improvement of a speaker frame that allows for an injection molded frame to secure the yoke part, the magnet, and the upper plate without requiring adhesive (Paragraph 11). The examiner also notes that these are the same components that attach to the frame of Miyamoto. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the frame of Han in place of the frame of Miyamoto thereby enhancing the speaker of Miyamoto do to Han's

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frame not needing adhesive. Although the advantage of an interval-accuracy between the one diaphragm as compared to the other being improved is not taught by either reference, it would be a direct result of the combination of both references; since due to the way Han's frame is molded, the diaphragm connected to the frame on the same side as the reference plane for the yoke would have better accuracy than the other side. Therefore while the references are combined for reasons other than improving the interval accuracy, the improvement to the interval accuracy between one side over the other still occurs.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JS
July 6, 2007



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